

*REMARKS*

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated November 6, 2003. In view of the amendments set out above and the following remarks, reconsideration is respectfully requested.

Claims 91, 92, 96, 119, 120, and 124 have been canceled, and claims 88, 93-95, 116, 121-123 and 130-133 remain pending. Claims 88 and 116 have been amended to describe the invention more clearly. No new matter has been added, the basis for the amended claim language may be found within the original specification, claims and drawings.

Several changes have been made in the specification to improve its form. The Summary of the Invention section of the specification has been amended to correspond to the currently pending claims. No new matter has been added.

Claims 88 and 91-95 were provisionally rejected under 35 U.S.C. §101 as claiming the same invention as that of claims 10 and 32-36 of copending Application No. 09/847,516.

Claims 96, 116 and 119-124 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 13, 23, 29, 31, 40 and 46-51 of copending Application No. 09/847,516.

The claims have been amended to more distinctly claim the subject matter which Applicants regard as their invention. It is respectfully submitted that with these amendments to the claims, the double-patenting rejections have been overcome and should be withdrawn.

Claims 116, 119-124, 132, and 133 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 116 has been amended to improve the form and specifically to refer to “wavelengths” in the range of from about 100 nm to about 1100 nm. Thus, it is respectfully submitted that with this amendment to the claim, the basis for rejection under 35 U.S.C. §112 has now been overcome and should be withdrawn.

Claims 88, 91-93, 116, 119-121 and 130-133 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,376,281 to Safta in view of U.S. Patent No. 5,900,211 to Dunn et al. This rejection is respectfully traversed.

The present invention is directed to a highly reliable and highly effective method and system for treating source water. The inventive method includes directing source water to a prefilter assembly including a filter medium having a removal rating of about 10 microns or more and prefiltering the source water through the filter medium to produce prefiltered water, directing the prefiltered water from the prefilter assembly to a radiation assembly having a

radiation source which generates pulsed, broadband radiation and irradiating the prefiltered water with the pulsed, broadband radiation generated by the radiation source to produce irradiated water, wherein the broadband radiation generated by the radiation source has wavelengths in the range of from about 100 nm to about 1100 nm, and directing the irradiated water from the radiation assembly to a filter assembly including a microporous filter medium having a removal rating of about 1 micron or less and filtering the irradiated water through the microporous filter medium.

None of the cited references disclose or suggest the presently claimed invention. For example, neither of the references disclose or even suggest the elegantly simple, highly reliable system and method of the present invention.

Safta, in contrast to the present invention, discloses an apparatus for purifying water including three UV radiators, five filtration stages comprising seven separate filters, five reactors comprising eight reactor beds, and a laser irradiation stage (col. 1, lines 30-67 and Figure 1). In addition to treatment by these components, Safta teaches that pretreatment of the water is performed by conventional municipal water supply treatments (col. 4, lines 52-55). Safta teaches that the components of the apparatus, including the multiple UV radiators, the plurality of reactors, the various filtration stages, and the laser irradiation stage, work together to kill and remove microbes in the water (col. 2, lines 5-18). According to Safta, it is preferable that the water is routed through *all the components* (col. 4, lines 66-68).

Even in disclosing less expensive apparatuses including fewer components (which according to Safta sacrifices purity), the less expensive apparatuses of Safta include a multitude of components and are considerably more complicated than the present invention. For example, a minimal apparatus of Safta includes, in addition to the UV radiator, at least one reactor filled with quartz granules, two micro filtration stages, an ultra filtration stage, another reactor filled with gold balls, and a laser irradiation stage. In another minimal apparatus of Safta, the apparatus includes, in addition to the UV radiator, at least a fine filtration stage, an ultra fine filtration stage, a two-stage reactor bed filled with quartz granules and noble metal balls, a coarse filtration stage, and another fine filtration stage.

Safta simply does not disclose or suggest that an effective water treatment system may be as simple as including a prefilter disposed between an inlet for source water and an outlet for discharging water, a filter assembly disposed between the prefilter and the outlet, and a radiation assembly disposed between the prefilter and the filter assembly. Safta certainly does not disclose or suggest a water treatment system having the claimed combination of specific characteristics, including a prefilter including a filter medium having a removal rating of about 10 microns or more, a filter assembly having a microporous filter medium having a removal

rating of about 1 micron or less, or a radiation source generating pulsed broadband radiation, that Applicants have found to provide such effective water treatment with increased reliability. Indeed, Safta does not disclose or suggest any removal ratings, let alone the specific, advantageous removal ratings of the prefilter and filter that Applicants have found to provide such effective water treatment.

Applicants have found that the claimed combination of components having the claimed characteristics provide an effective and highly reliable water treatment system and method. The reduced number of components in the claimed system provides increased reliability, without sacrificing purity. One of skill in the art reading Safta would simply not be led to select the particular combination of claimed components having the specific claimed characteristics of the present invention, without the benefit of Applicants' disclosure and impermissible hindsight.

The secondary reference, Dunn, does not cure the deficiencies of Safta. Dunn merely discloses using UV to inactivate microorganisms. Dunn also teaches that it is desirable to treat fluids with light when the fluids are substantially free of solid, particulate materials (col. 6, lines 48-50). One of skill in the art reading Dunn would never be led to irradiate water *upstream* of a filtration assembly, since this would result in irradiating water prior to the removal of solid particulate materials, contrary to the teaching of Dunn. However, Applicants have found that significant advantages are achieved by placing a radiation assembly upstream of a filtration assembly. For example, one significant advantage of irradiating upstream of the filter assembly filter medium is that the accumulation of organic matter on the medium and the development of a biofilm is prevented or retarded, and thus the filter medium is continuously cleaned (specification pg. 4, lines 18-24).

In summary, there is nothing in the cited references that would lead one of ordinary skill in the art to select a prefilter assembly including a filter medium having a removal rating of about 10 microns or more in combination with a filter assembly having a removal rating of from about 0.05 microns to about 1 micron and in further combination with a radiation source disposed between the prefilter assembly and the filter assembly which generates pulsed broadband radiation having wavelengths in the range of from about 100 nm to about 1100 nm.

For the reasons set forth above, reconsideration of the rejections is respectfully requested.

In view of the amendment and remarks recited herein, the application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue.

In re Appln. of STEVENS et al.  
Application No. 10/069,935

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

Shannon Schemel

Shannon Schemel, Reg. No. 47,926

LEYDIG, VOIT & MAYER

700 Thirteenth Street, N.W., Suite 300

Washington, DC 20005-3960

(202) 737-6770 (telephone)

(202) 737-6776 (facsimile)

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SDS:ves